Sewage Handling

Environmental Concerns

Raw or poorly treated boat sewage is harmful to human health and water quality. Typhoid, hepatitis, cholera, gastroenteritis, and other waterborne diseases may be passed directly to people who swim in contaminated waters. People may also become infected by eating shellfish contaminated with viruses and other microorganisms contained in sewage discharge.

Sewage is also harmful to water quality. Because the microorganisms within sewage need oxygen, any effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. Furthermore, the heavy nutrient load in sewage promotes excessive algal growth. As the algae multiply, they prevent life-giving sunlight from reaching subsurface vegetation. When the algae die they create another problem: the algae are decomposed by bacteria which further reduce levels of dissolved oxygen.

Legal Setting

Marine Sanitation Devices

For all of the reasons stated above, it is illegal to discharge raw sewage from a vessel within U.S. territorial waters, *i.e.*, anywhere other than three or more miles out into the open ocean. The Federal Clean Water Act and Maryland law (Natural Resources Article §8-741) require that any vessel with an installed toilet be equipped with a certified Type I, Type II, or Type III marine sanitation device (MSD):

- *Type I* systems mechanically cut solids, disinfect the waste with a chemical additive or with chlorine disassociated from salt water with an electronic jolt, and discharge the treated sewage overboard. The fecal coliform bacteria count of the effluent may be no greater than 1,000 per 100 milliliters and may not contain any floating solids.

- *Type II* systems are similar to Type I systems except that the Type IIs treat the sewage to a higher standard; effluent fecal coliform bacteria levels may not exceed 200 per 100 milliliters and total suspended solids may not be greater than 150 milligrams per liter. Type IIs also require more space and have greater operating energy requirements.

- *Type III* systems do not allow sewage to be discharged. The most common form of a Type III system is a holding tank. Other forms include recirculating and incinerating systems.

Vessels 65 feet and under may have any of the three types of MSDs. Vessels over 65 feet must have a Type II or III system. Additionally, Type I and Type II systems must display a certification label affixed by the manufacturer. A certification label is not required on Type III systems.

State law allows a vessel with an installed toilet to have a "Y" valve or other means to bypass the sanitation system. Within State waters, including the entire Chesapeake Bay and its tributaries, however, all pathways for overboard discharge of raw sewage must be secured. The "Y" valve may be secured with a padlock or a non-reusable nylon tie known as a wire tie. Alternatively, the valve handle can be moved to the closed position and removed.

Finally, any vessel with an installed toilet that is offered in Maryland as a noncaptained charter must be equipped with an operational MSD. The lease agreement signed by the leasing party must include a paragraph outlining the operator's responsibility under Natural Resources Article §8-741.

It should be noted that MSD requirements do not apply to vessels with portable toilets. Portable toilets should be properly emptied on shore. Remember, it is illegal to discharge raw sewage to any State waterway. Most pumpout facilities have wand attachments to empty portable toilets. Some marinas have portable toilet dump stations.

While not required, it is a good idea to include information about the MSD law in your contracts for slips, transients, and liveaboards too.

Pumpout Stations

Maryland law, Environment Article §9-333, requires the following types of facilities to have pumpout stations:

- Existing marinas wishing to expand to a total of 11 or more slips and that are capable of berthing vessels that are 22 feet or larger.
- New marinas with more than 10 slips and that are capable of berthing vessels that are 22 feet or larger.
- Marinas with 50 or more slips and that berth any vessel over 22 feet in length. Marinas with 50 or more slips must be able to accept waste from portable toilets as well as from holding tanks.

Installation of a pumpout system may also be required as a condition of receiving a wetlands permit from the Maryland Department of the Environment.

No Discharge Zones

A No Discharge Zone (NDZ) is an area of water that requires greater environmental protection and where even treated sewage may not be discharged from a boat. When operating in an NDZ, Type I and Type II systems must be secured to prevent discharge. All freshwater lakes, reservoirs, and rivers not capable of interstate vessel traffic are defined by the Federal Clean Water Act as No Discharge Zones. States, with the approval of the U.S. Environmental Protection Agency, may establish NDZs in other State waters. In spring 2002, EPA approved two No Discharge Zones for Maryland: Herring Bay and the northern Coastal Bays.

Best Management Practices to Control Sewage

Install a Pumpout System. Help boaters to meet the requirements of the law by providing a convenient, reliable marine sewage disposal facility, *i.e.,* a pumpout station. You, as a marina operator, may benefit from the installation of a pumpout in several ways. The presence of the pumpout facility promotes a public perception that you are environmentally responsible. More tangibly, the need for holding tanks to be pumped out regularly will draw a steady stream of customers to your dock. Each arriving vessel represents an opportunity to sell fuel, hardware, repair services, etc.

Marinas may apply for up to $15,000 in grant funding to install pumpout systems.

Any public or private marina in Maryland is eligible to apply for up to $15,000 in grant funds to install a pumpout station. To apply for a Pumpout Station Grant, contact the Maryland Department of Natural Resources (DNR) for an application. Please be aware that the grants are *strictly reimbursable*. You must pay for the equipment and installation up front. The Department will then reimburse you for pre-approved expenses.

In exchange for grant funding, marina owners agree to maintain pumpout systems in operating condition for a minimum of 10 years and agree not to charge more than $5 per pumpout. The pumpout system must be able to accept waste from portable toilets as well as from holding tanks and must be available to the general public during reasonable business hours. Although most marinas choose to use grant funding, there is no requirement to do so.

Once you have decided to invest in a pumpout system, consider the following recommendations.

❖ *Select an Appropriate System*. Select a system that best meets the needs of your clients and that can move the expected volume of sewage over the required distance. Ask the manufacturer for a written assurance that their system will operate effectively given the specific conditions at your marina.

There are several types of pumpout systems available:

- systems permanently fixed to a dock,
- mobile systems mounted on a golf cart or hand truck,

- direct slipside connections, and
- pumpout boats.

Please note that grant funding is not available for direct slipside connections as these types of systems generally are not available for public use.

❖ *Choose an Accessible Location*. Consider where the pumpout will be placed (if you select a fixed system). It should easily accommodate the types of boats that frequent your marina. Fuel docks are often good locations. Try to locate the pumpout system such that a vessel being pumped out does not prevent another boat from fueling.

❖ *Dispose of Collected Waste*. The best option for disposing of the collected waste is to connect directly to a public sewer line. If sewer is not available in your area, you will need a holding tank. The contents of the tank must be pumped periodically and trucked to a treatment plant. Holding tank size and location is generally determined by the local health department.

❖ *Handle Collected Waste with Care*. For health reasons, workers should take precautions to avoid coming into direct contact with sewage. Workers should wear rubber gloves and respirators when maintaining or repairing MSDs.

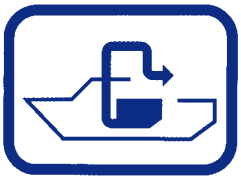
❖ *Decide if the Pumpout will be Staffed*. It is a good idea to have an attendant operate the pumpout. Consider installing a buzzer or paging system so that boaters at the pumpout station can easily locate the attendant. If the station is unattended, be sure that clear instructions for use are posted.

❖ *Decide Whether a Fee Will be Charged*. If a fee is charged, how much will it be? Will tenants and liveaboards be charged? Or just transients? Remember, no more than $5 may be charged if grant funds were accepted for the purchase and/or installation of the system. If the pumpout system is not regularly staffed, you will have to make arrangements to collect the fee. Token systems have been used with success in many locations in Maryland.

❖ *Post Signs*. Provide information about use and cost of the pumpout station, hours of operation, and where to call for service if the system is out of order. Also, post signs that are visible from the channel so that passing boaters are aware of the facility. If you do not have a pumpout system, post directions to the closest public pumpout.

❖ *Maintain the Pumpout System*. You should inspect the system regularly and keep a log of your observations. Contact the pumpout manufacturer for specific maintenance and winterization recommendations. During the boating season, test the efficiency of the pump weekly by measuring the length of time required for the system to empty a 5-gallon bucket of water. In order to quickly address any malfunctions, establish a maintenance agreement with a contractor qualified to service and repair pumpout facilities. Some funding for maintenance and repair of pumpout

Be careful how you word your signs! Shortly after installing one of the first pumpout systems in Annapolis, a marina owner hung a large sign declaring the availability of his new facility. Over the course of the next week, he noticed a significant drop in fuel sales. One evening he watched one of his regular customers head across Spa Creek to a competitor's fuel dock. The marina manager called out to ask why the boater was bypassing his marina. The boater gestured toward the sign hung over the dock shared by the pumpout system and the fuel pumps. It read, "Pump Out." The boater thought "pump out" meant that the fuel pumps were out of order! A better choice for signs might be "Pumpout Station," "Sewage Pumpout," or simply show the national pumpout symbol.



The national pumpout symbol is an easy way to advertise the availability of pumpout facilities.

systems may be available through the Department of Natural Resources. Contact DNR for more information.

❖ *Do Not Allow Waste to Drain into Receiving Waters.* Do not allow rinse water or residual waste in the hoses to drain into receiving waters. Keep the pump running until it has been re-primed with clean water.

❖ *Educate Staff.* The Department of Natural Resources is aware of several incidents in which boaters were told that the pumpout system was broken when in fact it was not. The Department has also received complaints about rude dockhands and inconvenient procedures. If boaters are going to use the pumpout systems, the experience must be as pleasant and convenient as possible. As the manager of a marina with a pumpout, you are demonstrating your commitment to clean water. It is imperative that your staff exhibit this same level of care.

Discourage Discharge from Type I and Type II MSDs at the Slip or Mooring. Effluent from legal Type I and Type II systems contains nutrients and possibly toxic chemicals. It probably contains pathogens as well. While many pass-through systems are capable of treating sewage to much higher levels, recall that the standard for Type I systems is a fecal coliform bacteria count of 1,000 per 100 milliliters. Bathing beaches may be closed at levels of 200 per 1,000 milliliters (COMAR 26.08.09.06). Thus, discharges from Type I and Type II systems in crowded, protected areas – such as marinas – pose a real threat to human health and water quality. Adopt the following recommendations to discourage discharge within your facility.

❖ Prohibit discharge of head waste in your marina as a condition of your lease agreements.

❖ Post signs prohibiting the discharge of head waste and directing people to use shoreside restrooms.

◆ If your marina is located within a No Discharge Zone (presently just Herring Bay and the northern Coastal Bays), boaters must secure their Type I and Type II MSDs, *e.g.,* lock the door to the head or disable the seacock.

Provide Shoreside Restrooms.

❖ Provide clean, functional restrooms to encourage people not to use their heads while in port.

❖ Make restrooms available 24 hours a day.

❖ Install a security system on restroom doors so people will feel safe using them, particularly late at night.

✧ Provide air conditioning and heating.

Design and Maintain Septic Systems to Protect Water Quality and Public Health. If you have a septic system, be alert for signs of trouble: wet areas or standing water above the absorption field, toilets that run slowly or back up, and odor. Septic failures can contaminate drinking water and shellfish. The following tips will help you to avoid the health risks and nuisance associated with an overburdened system (Miller and Eubanks 1992).

❖ Post signs in the restrooms informing patrons not to place paper towels, tissues, cigarette butts, disposable diapers, sanitary napkins or tampons in the toilets. These items can clog the septic system.
❖ Post signs in the laundry room encouraging patrons to use minimal amounts of detergents and bleaches.
❖ Do not dump solvents such as paint thinner or pesticides down the drain and post signs prohibiting customers from doing the same.
❖ Do not pour fats and oils down drains.
❖ Do not use a garbage disposal. Disposals increase the amount of solids entering the system. Capacity is reached more quickly. As a result, more frequent pumping is necessary.
❖ Use small amounts of drain cleaners, household cleaners, and other similar products.
❖ Do not use "starter enzyme" or yeast. These products can damage the system by causing the infiltration bed to become clogged with solids that have been flushed from the septic tank.
❖ Direct downspouts and runoff away from the septic field in order to avoid saturating the area with excess water. For stormwater management reasons, do not direct the flow toward paved areas.
❖ Do not compact the soil by driving or parking over the infiltration area.
❖ Hire a licensed professional to pump the tank every 2-5 years.

Provide Facilities for Liveaboards. Boaters who make their homes aboard vessels pose a tricky problem. It is not reasonable to expect that they will regularly untie in order to use a fixed pumpout facility. It is also unwise to assume that people living on their boats will always use shoreside restrooms. Furthermore, it is undesirable to allow a resident population to discharge Type I or II systems. Your obligation as marina owner/manager is to provide a convenient sewage disposal system for liveaboards while maintaining good water quality. Consider the following options to meet this challenge. Keep in mind that most liveaboards expect and are willing to pay a premium for extra service and more convenient slips.
❖ Provide a portable pumpout system or require that liveaboards contract with a mobile pumpout service.
❖ Reserve slips closest to shoreside restrooms for liveaboards. Be sure that the dock and route to the bath house are well lit at night.
❖ Stipulate in the lease agreement that vessels used as homes may not discharge any sewage.
❖ Offer to board their vessels and demonstrate the proper way to secure the "Y" valve.
✧ As a condition of the lease agreement, require that liveaboards place dye tablets in holding tanks to make any discharge clearly visible.
✧ Install direct sewer hookups for liveaboards.

Offer MSD Inspections.
✧ Service patrons' MSDs annually to ensure that their Type I and II systems are functioning properly.
✧ Encourage boaters to run dye tablets through their Type I or Type II systems outside of the marina. If a system is operating properly, no dye will be visible. Maintenance is required if dye can be seen in the discharge.

Sewage and gray water from bath houses and laundry facilities may be discharged to a publicly owned treatment works or to an approved septic system.

Encourage Compliance.

❖ Include information about MSD requirements and sewage laws in contracts for slips rentals, transients, and liveaboards.

❖ State that failure to comply with the MSD laws and marina policy will result in expulsion from the marina and forfeiture of fees.

❖ If a customer fails to observe the law or honor your contract: 1) discuss the matter with him or her, 2) mail a written notice asking that the offending practice stop immediately and keep a copy for your records, and 3) evict the boater.

❖ If a tenant is discharging raw sewage, report him or her to the Natural Resources Police. Provide as much information as possible: name of owner, vessel, location, etc.

Educate Boaters. As the generators and conveyors of sewage, boaters need to be educated about the impacts of sewage and its proper disposal. They must also be encouraged to properly maintain their MSDs and to purchase environmentally-friendly treatment products for their heads and holding tanks.

❖ Photocopy the *Sewage Handling* tip sheet from the back of this book and distribute it to your customers. There is room to add your marina's name and logo.

Information Sources

Appendix I

American Boat and Yacht Council

Maryland Department of Natural Resources
- Natural Resources Police
- Waterway and Greenways Division